CHAPTER 1

Product Overview

The Catalyst 3750-X and 3560-X series switches are Ethernet switches to which you can connect devices such as Cisco IP Phones, Cisco Wireless Access Points, workstations, and other network devices such as servers, routers, and other switches.

The Catalyst 3750-X switches support stacking through Cisco StackWise technology and power management through StackPower. The Catalyst 3560-X switches do not support switch stacking or StackPower.

Unless otherwise noted, the term *switch* refers to a standalone switch and to a switch stack.

- Switch Models, page 1-1
- Front Panel Description, page 1-3
- Rear Panel Description, page 1-15
- Management Options, page 1-21

Switch Models

Table 1-1 Catalyst 3750-X Switch Models

Switch Model	Cisco IOS Image	Description
Catalyst 3750-X-24T-L	LAN Base image	24 10/100/1000 Ethernet ports, StackWise Plus, 1 network module[1] slot, 350-W power supply
Catalyst 3750-X-48T-L	LAN Base image	48 10/100/1000 Ethernet ports, StackWise Plus, one network module[1] slot, 350-W power supply
Catalyst 3750-X-24P-L	LAN Base image	24 10/100/1000 PoE+[2] ports, StackWise Plus, 1 network module[1] slot, 715-W power supply
Catalyst 3750-X-48P-L	LAN Base image	48 10/100/1000 PoE+[2] ports, StackWise Plus, one network module[1] slot, 715-W power supply
Catalyst 3750-X-48PF-L	LAN Base image	48 10/100/1000 PoE+[2] ports, StackWise Plus, 1 network module[1] slot, 1100-W power supply
Catalyst 3750-X-24T-S	IP Base image[3]	24 10/100/1000 Ethernet ports, StackWise Plus, StackPower, 1 network module[1] slot, 350-W power supply

Table 1-1 Catalyst 3750-X Switch Models (continued)

Switch Model	Cisco IOS Image	Description
Catalyst 3750-X-48T-S	IP Base image[3]	48 10/100/1000 Ethernet ports, StackWise Plus, StackPower, 1 network module[1] slot, 350-W power supply
Catalyst 3750-X-24P-S	IP Base image[3]	24 10/100/1000 PoE+[2] ports, StackWise Plus, StackPower, 1 network module[1] slot, 715-W power supply
Catalyst 3750-X-48P-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, StackWise Plus, StackPower, 1 network module[1] slot, 715-W power supply
Catalyst 3750-X-48PF-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, StackWise Plus, StackPower, 1 network module[1] slot, 1100-W power supply

1. Available network modules: 10-Gigabit Ethernet network module; 1-Gigabit Ethernet network module; blank module (see Table 1-3 on page 1-5).
2. PoE+ = Power over Ethernet plus (provides up to 30 W per port).
3. You can upgrade to the IP Services feature set when you order the switch.

Table 1-2 Catalyst 3560-X Switch Models

Switch	Part Number	Description
Catalyst 3560-X-24T-L	LAN Base image	24 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-48T-L	LAN Base image	48 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-24P-L	LAN Base image	24 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48P-L	LAN Base image	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48PF-L	LAN Base image	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 1100-W power supply
Catalyst 3560-X-24T-S	IP Base image[3]	24 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-48T-S	IP Base image[3]	48 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-24P-S	IP Base image[3]	24 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48P-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48PF-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 1100-W power supply

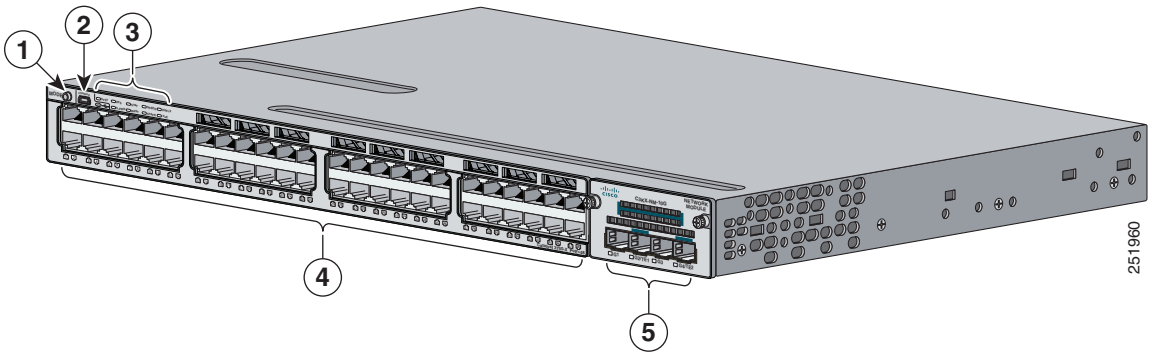
1. Available network modules: 10-Gigabit Ethernet network module; 1-Gigabit Ethernet network module; blank module (see Table 1-3 on page 1-5).
2. PoE+ = Power over Ethernet plus (provides up to 30 W per port).

3. You can upgrade to the IP Services feature set when you order the switch.

Front Panel Description

The switch front panel includes a USB Type B console port, the 10/100/1000 Ethernet ports or the 10/100/1000 PoE+ ports, the network module, and the switch LEDs. Figure 1-1 shows the Catalyst 3750-X-48 PoE+ switch as an example. All the Catalyst 3750-X and 3560-X switches have similar components.

Figure 1-1 Switch Front Panel



1	Mode button	**4**	10/100/1000 ports
2	USB Type B console port	**5**	Network Module
3	Status LEDs		

10/100/1000 Ethernet Ports

The 10/100/1000 Ethernet ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX and 1000BASE-T traffic requires Category 5, Category 5e, or Category 6 unshielded twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

For information about the 10/100/1000 Ethernet port connections and specifications, see the "10/100/1000 Ethernet Port Connections" section on page 2-26 and Appendix B, "Connector and Cable Specifications."

PoE+ Ports

The PoE+ ports use the same connectors as described in the previous section and provide this support.

- Support for IEEE 802.3af compliant powered devices (up to 15.4 W)
- Support for IEEE 802.3at compliant powered devices (up to 30 W)
- Support for Cisco enhanced PoE
- Support for prestandard Cisco powered devices

- Configuration for StackPower PoE+. When the switch internal power supply module(s) cannot support the total load, StackPower configurations allow the switch to leverage power available from other switches (only Catalyst 3750-X switches)
- Configurable support for Cisco intelligent power management, including enhanced power negotiation, power reservation, and per-port power policing

Depending on the installed power supply modules, each port can deliver up to 30 W of PoE+. See Table 1-17 for the power supply matrix that defines the available PoE and PoE+ power per port.

Note The output of the PoE+ circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

For information about power supply modules, PoE+ port connections, and PoE+ specifications, see the "Power Supply Modules" section on page 1-17, the "PoE+ Port Connections" section on page 2-26, and Appendix B, "Connector and Cable Specifications."

Network Modules

The switch has one hot-swappable network module that provides SFP and SFP+ uplink ports to connect to other devices. You must insert the network module during switch operation. Operating the switch without a network module is not supported. A blank module is available.

The switch generates logs when you insert or remove a network module with SFP ports.

Table 1-3 Network Modules

Network Module[1]	Description
Blank	This module has no uplink ports.
1-Gigabit Ethernet	This module has four 1-Gigabit SFP module slots. Any combination of standard SFP modules are supported. SFP+ modules are not supported. If you insert an SFP+ module in the 1-Gigabit network module, the SFP+ module does not operate, and the switch logs an error message.
10-Gigabit Ethernet	This module has four slots. Two slots support only 1-Gigabit SFP modules, two slots support either 1-Gigabit SFP or 10-Gigabit SFP+ modules. The four slots are grouped as two pairs with each pair consisting of one SFP slot and one SFP+ slot. Each pair supports either two 1-Gigabit SFP modules or one 10-Gigabit SFP+ module. A 10-Gigabit SFP+ module cannot operate at the same time as the corresponding 1-Gigabit SFP module in the pair. Supported combinations of SFP and SFP+ modules: • Slots 1, 2, 3, and 4 populated with 1-Gigabit SFP modules. • Slots 1 and 2 populated with 1-Gigabit SFP modules and Slot 4 populated with one 10-Gigabit SFP+ module. • Slot 2 populated with one 10-Gigabit SFP+ module and Slots 3 and 4 populated with 1-Gigabit SFP modules. • Slot 2 and Slot 4 each populated with 10-Gigabit SFP+ modules. A 10-Gigabit SFP+ module takes precedence over a 1-Gigabit SFP module except when an SFP module is first inserted in Slot 1 and has link. When you insert an SFP+ module in Slot 2, the SFP in Slot 1 retains link. The SFP+ module in Slot 2 does not operate. When the SFP module in Slot 1 is shutdown, loses link, or is removed, the SFP+ module in Slot 2 becomes operational. At this point, the SFP module in Slot 1 will not become operational under any circumstance for as long as an SFP+ module remains in Slot 2 whether it is link up or not. The same precedence applies to Slots 3 and 4.

1. All network modules are hot-swappable.

For information about the network modules, see the "Installing a Network Module in the Switch" section on page 2-21. For cable specifications, see Appendix B, "Connector and Cable Specifications."

SFP and SFP+ Modules

The switch-Gigabit Ethernet SFP and SFP+ modules provide copper or fiber-optic connections to other devices. These transceiver modules are field-replaceable, providing the uplink interfaces when installed in an SFP module slot. The SFP modules have LC connectors for fiber-optic connections or RJ-45 connectors for copper connections.

Use only Cisco SFP modules on the switch.

Table 1-4 Cisco SFP Modules Supported for the 3750-X and 3560-X Switches

Part Number	Description
GLC-GE-100FX=	100FX SFP on GE SFP ports for LAN switches[1]
GLC-LH-SM=	GE SFP, LC connector LX/LH transceiver
GLC-SX-MM=	GE SFP, LC connector SX transceiver
GLC-T=	1000BASE-T SFP transceiver module for copper connections[1]
GLC-ZX-SM=	1000BASE-ZX SFP module for SMF, 1550 nm
GLC-BX-D=	1000BASE-BX10 SFP module for single-strand SMF, 1490-nm TX, 1310-nm RX wavelength
GLC-BX-U=	1000BASE-BX10 SFP module for single-strand SMF, 1310-nm TX, 1490-nm RX wavelength
CWDM-SFP-1470=	CWDM 1470-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610-nm SFP Gigabit Ethernet and 1G/2G FC
SFP-GE-S=	1000BASE-SX SFP module for MMF, 850 nm (DOM)[2]
SFP-GE-L=	1000BASE-LX/LH SFP module for SMF, 1300 nm (DOM)[2]
DWDM-SFP-3033=	DWDM SFP 1530.33-nm SFP (100 GHz ITU grid)
DWDM-SFP-3112=	DWDM SFP 1531.12-nm SFP (100 GHz ITU grid)
DWDM-SFP-3190=	DWDM SFP 1531.90-nm SFP (100 GHz ITU grid)
DWDM-SFP-3268=	DWDM SFP 1532.68-nm SFP (100 GHz ITU grid)
DWDM-SFP-3346=	DWDM SFP 1533.47-nm SFP (100 GHz ITU grid)
DWDM-SFP-3425=	DWDM SFP 1534.25-nm SFP (100 GHz ITU grid)
DWDM-SFP-3504=	DWDM SFP 1535.04-nm SFP (100 GHz ITU grid)
DWDM-SFP-3582=	DWDM SFP 1535.82-nm SFP (100 GHz ITU grid)
DWDM-SFP-3661=	DWDM SFP 1536.61-nm SFP (100 GHz ITU grid)
DWDM-SFP-3739=	DWDM SFP 1537.40-nm SFP (100 GHz ITU grid)
DWDM-SFP-3819=	DWDM SFP 1538.19-nm SFP (100 GHz ITU grid)
DWDM-SFP-3898=	DWDM SFP 1538.98-nm SFP (100 GHz ITU grid)
DWDM-SFP-3977=	DWDM SFP 1539.77-nm SFP (100 GHz ITU grid)
DWDM-SFP-4056=	DWDM SFP 1540.56-nm SFP (100 GHz ITU grid)
DWDM-SFP-4134=	DWDM SFP 1541.35-nm SFP (100 GHz ITU grid)
DWDM-SFP-4214=	DWDM SFP 1542.14-nm SFP (100 GHz ITU grid)
DWDM-SFP-4294=	DWDM SFP 1542.94-nm SFP (100 GHz ITU grid)

Table 1-4 Cisco SFP Modules Supported for the 3750-X and 3560-X Switches (continued)

Part Number	Description
DWDM-SFP-4373=	DWDM SFP 1543.73-nm SFP (100 GHz ITU grid)
DWDM-SFP-4453=	DWDM SFP 1544.53-nm SFP (100 GHz ITU grid)
DWDM-SFP-4532=	DWDM SFP 1545.32-nm SFP (100 GHz ITU grid)
DWDM-SFP-4612=	DWDM SFP 1546.12-nm SFP (100 GHz ITU grid)
DWDM-SFP-4692=	DWDM SFP 1546.92-nm SFP (100 GHz ITU grid)
DWDM-SFP-4772=	DWDM SFP 1547.72-nm SFP (100 GHz ITU grid)
DWDM-SFP-4851=	DWDM SFP 1548.51-nm SFP (100 GHz ITU grid)
DWDM-SFP-4931=	DWDM SFP 1549.32-nm SFP (100 GHz ITU grid)
DWDM-SFP-5012=	DWDM SFP 1550.12-nm SFP (100 GHz ITU grid)
DWDM-SFP-5092=	DWDM SFP 1550.92-nm SFP (100 GHz ITU grid)
DWDM-SFP-5172=	DWDM SFP 1551.72-nm SFP (100 GHz ITU grid)
DWDM-SFP-5252=	DWDM SFP 1552.52-nm SFP (100 GHz ITU grid)
DWDM-SFP-5332=	DWDM SFP 1553.33-nm SFP (100 GHz ITU grid)
DWDM-SFP-5413=	DWDM SFP 1554.13-nm SFP (100 GHz ITU grid)
DWDM-SFP-5494=	DWDM SFP 1554.94-nm SFP (100 GHz ITU grid)
DWDM-SFP-5575=	DWDM SFP 1555.75-nm SFP (100 GHz ITU grid)
DWDM-SFP-5655=	DWDM SFP 1556.55-nm SFP (100 GHz ITU grid)
DWDM-SFP-5736=	DWDM SFP 1557.36-nm SFP (100 GHz ITU grid)
DWDM-SFP-5817=	DWDM SFP 1558.17-nm SFP (100 GHz ITU grid)
DWDM-SFP-5898=	DWDM SFP 1558.98-nm SFP (100 GHz ITU grid)
DWDM-SFP-5979=	DWDM SFP 1559.79-nm SFP (100 GHz ITU grid)
DWDM-SFP-6061=	DWDM SFP 1560.61-nm SFP (100 GHz ITU grid)
DWDM-SFP-6141=	DWDM SFP 1561.42-nm SFP (100 GHz ITU grid)

1. Not supported for NEBS.
2. DOM = digital optical monitoring.

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Table 1-5 Cisco SFP+ Modules Supported for the 3750-X and 3560-X Switches

Part Number	Description
SFP-10G-LR=	10 GBASE LR SFP+ transceiver module for SMF, 1350 nm, LC duplex connector
SFP-10G-SR=	10 GBASE SR SFP+ transceiver module for MMF, 850 nm, LC duplex connector
SFP-10G-LRM=	10 GBASE-LRM SFP+ module for MMF and SMF, 1310 nm
SFP-H10GB-CU1M=	10 GBASE-CU Twinax SFP+ cable assembly, 1 meter

Table 1-5 Cisco SFP+ Modules Supported for the 3750-X and 3560-X Switches

Part Number	Description
SFP-H10GB-CU3M=	10 GBASE-CU Twinax SFP+ cable assembly, 3 meters
SFP-H10GB-CU5M=	10 GBASE-CU Twinax SFP+ cable assembly, 5meters

For information about SFP modules, see your SFP module documentation and the "Installing SFP and SFP+ Modules" section on page 2-23. For cable specifications, see Appendix B, "Connector and Cable Specifications."

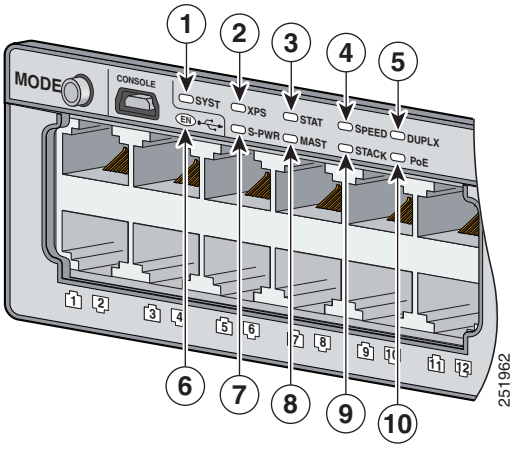
Note When ordering or using CX1 cables, ensure that the version identifier is 2 or higher.

The Catalyst 3560-X switch supports the SFP module patch cable (CAB-SFP-50CM), a 0.5-meter, copper, passive cable with SFP module connectors at each end. This cable is only used with 1-Gigabit Ethernet SFP ports to connect two Catalyst 3560-X switches in a cascaded configuration.

LEDs

You can use the switch LEDs to monitor switch activity and its performance. Figure 1-2 shows the Catalyst 3750-X switch LEDs and the Mode button that you use to select a port mode.

Figure 1-2 Switch Front Panel LEDs



1	System LED	**6**	USB console port LED
2	XPS[1] LED	**7**	S-PWR (StackPower) LED[2]
3	Status LED	**8**	Master LED[2]
4	Speed LED	**9**	Stack LED[2]
5	Duplex LED	**10**	PoE+ LED[3]

1. XPS = Expandable power system.

2. Only Catalyst 3750-X switches.
3. Only switches with PoE+ ports.

System LED

Table 1-6 System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Blinking Green	Switch is running power on self-test (POST).
Blinking Amber	There is a fault with one of the following: • Network module (non-traffic-related) • Power supply • Fan module
Amber	System is receiving power but is not functioning properly.

For information on the System LED colors during power-on self-test (POST), see the "Diagnosing Problems" section on page 4-1.

XPS LED

Table 1-7 XPS LED

Color	XPS Status
Off	XPS cable is not installed. Switch is in StackPower mode (Catalyst 3750-X).
Green	XPS is connected and ready to provide back-up power.
Blinking green	XPS is connected but is unavailable because it is providing power to another device (redundancy has been allocated to a neighboring device).
Amber	The XPS is in standby mode or in a fault condition. See the XPS-2200 documentation for information about the standby mode and fault conditions.
Blinking amber	The power supply in a switch has failed, and the XPS is providing power to that switch (redundancy has been allocated to this device).

Port LEDs and Modes

Each Ethernet port and 10-Gigabit Ethernet module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port mode determines the type of information shown by the port LEDs. Table 1-8 lists the mode LEDs and their associated port modes and meanings.

To select or change a mode, press the Mode button until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change. Table 1-9 explains how to interpret the port LED colors in different port modes.

When you press the Mode button on any switch in the Catalyst 3750-X switch stack, all the stack switches change to show the same selected mode. For example, if you press the Mode button on the stack master to show the SPEED LED, all the other switches in the stack also show the SPEED LED.

Table 1-8 Port Mode LEDs

Mode LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
SPEED	Port speed	The port operating speed: 10, 100, or 1000 Mb/s.
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex. **Note** The 10/100/1000 ports operate only in full-duplex mode.
MAST[1]	Master	The stack master status
STACK[1]	Stack member status StackWise port status	The stack member status. The StackWise port status. See the "Stack LED (Catalyst 3750-X)" section on page 1-12.
PoE+[2]	PoE+ port power	The PoE+ port status.

1. Only Catalyst 3750-X switches.
2. Only switches with PoE+ ports.

Table 1-9 Meaning of Switch LED Colors in Different Modes

Port Mode	Port LED Color	Meaning
STAT (port status)	Off	No link, or port was administratively shut down.
	Green	Link present, no activity.
	Blinking green	Activity. Port is sending or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.
	Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED can be amber for up to 30 seconds as STP checks the switch for possible loops.
SPEED	**10/100/1000 ports**	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	Single green flash (on for 100 ms, off for 1900 ms)	Port is operating at 1000 Mb/s.
	Network module slots	
	Off	Port is not operating.
	Blinking green	Port is operating at up to 10 Gb/s.

Table 1-9 Meaning of Switch LED Colors in Different Modes (continued)

Port Mode	Port LED Color	Meaning
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
MAST[1] (data stack master)	Off	The switch is not the stack master. **Note** For a standalone switch, this LED is off.
	Green	The switch is the stack master.
	Amber	Error during stack master election.
STACK[1] (stack member)	Off	No stack member corresponding to that member number.
	Blinking green	Stack member number.
	Green	Member numbers of other stack member switches.
PoE+[2]	Off	PoE+ is off. If the powered device is receiving power from an AC power source, the port LED is off even if the device is connected to the switch port.
	Green	PoE+ is on. The port LED is green when the switch port is providing power.
	Alternating green and amber	PoE+ is denied because providing power to the powered device will exceed the switch power capacity.
	Blinking amber	PoE+ is off due to a fault or because it has exceeded a limit set in the switch software. ⚠ **Caution** PoE+ faults are caused when noncompliant cabling or powered devices are connected to a PoE+ port. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices to PoE+ ports. You must remove from the network any cable or device that causes a PoE+ fault.
	Amber	PoE+ for the port has been disabled. **Note** PoE+ is enabled by default.

1. Only Catalyst 3750-X switches.
2. Only switches with PoE or PoE+ ports.

USB Console LED

The USB console LED shows whether there is an active USB connection to the port.

Table 1-10 USB Console Port LED

Color	Description
Off	USB console is disabled.
Green	USB console is enabled.

S-PWR LED (Catalyst 3750-X)

Table 1-11 S-PWR LED

Color	Description
Off	StackPower cable is not connected, or the switch is in standalone mode.
Green	An XPS cable is connected to the XPS-2200. Each StackPower port is connected to another switch or to an XPS-2200 (Catalyst 3750-X switches).
Blinking Green	This appears on the switch in a StackPower ring configuration that detects an open ring or has only one StackPower cable connected, and no connection to an XPS-2200.
Amber	There is a fault: load shedding is occurring, a StackPower cable is defective, or administrative action is required. See the switch software configuration guide for information about configuring StackPower.
Blinking Amber	The StackPower budget is not sufficient to meet current power demands.

Master LED (Catalyst 3750-X)

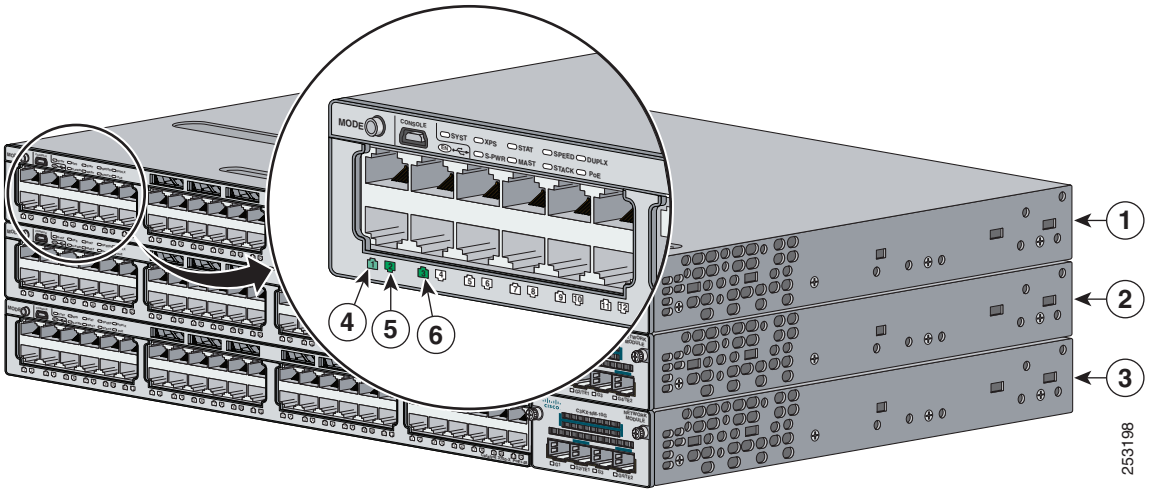
Table 1-12 Master LED

Color	Description
Off	Switch is not the stack master.
Green	Switch is the stack master or a standalone switch.
Amber	An error occurred when the switch was selecting the stack master switch, or another type of stack error occurred.

Stack LED (Catalyst 3750-X)

The stack LED shows the sequence of member switches in a stack. Up to nine switches can be members of a stack. The first nine port LEDs show the member number of a switch in a stack. Figure 1-3 shows the LEDs on the first switch, which is stack member number 1. For example, if you press the Mode button and select Stack, the LED for port 1 blinks green. The LEDs for ports 2 and 3 are solid green, as these represent the member numbers of other switches in the stack. The other port LEDs are off because there are no more members in the stack.

Figure 1-3 Stack LED



1	Stack member 1	**4**	LED blinks green to show that this is switch 1 in the stack.
2	Stack member 2	**5**	LED is solid green to show that switch 2 is a stack member.
3	Stack member 3	**6**	LED is solid green to show that switch 3 is a stack member.

When you select the Stack LED mode, the representative Stack LEDs are green when the StackWise ports are up, and the representative Stack LEDs are amber when the ports are down.

PoE+ LED

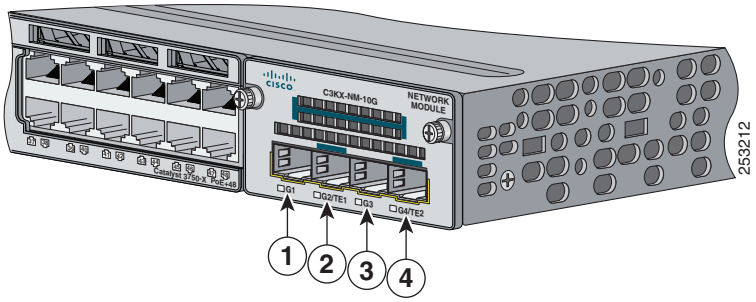
If the PoE+ LED mode is not selected on a switch with PoE+ ports, the PoE+ LED still shows detected PoE+ problems.

Table 1-13 PoE+ Mode LED

Color	PoE+ Status
Off	PoE+ mode is not selected. None of the 10/100/1000 ports have been denied power or are in a fault condition.
Green	PoE+ mode is selected, and the port LEDs show the PoE+ status.
Blinking amber	PoE+ mode is not selected. At least one of the 10/100/1000 ports has been denied power, or at least one of the 10/100/1000 ports has a PoE+ fault.

Network Module LEDs

Figure 1-4 Network Module LEDs (10-Gigabit Network Module Shown)



1	G1 LED	**3**	G3 LED
2	G2/TE1 LED	**4**	G4/TE2 LED

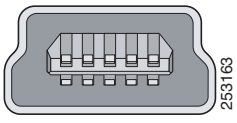
Table 1-14 Network Module LEDs

Color	Network Module Link Status
Off	Link is off.
Green	Link is on, no activity.
Blinking green	Activity on a link, no faults.
Blinking amber	Link is off due to a fault or because it has exceeded a limit set in the switch software. **Caution** Link faults are caused when noncompliant cabling is connected to an SFP or SFP+ port. Use only standard-compliant cabling to connect to Cisco SFP and SFP+ ports. You must remove from the network any cable or device that causes a link fault.
Amber	Link for the SFP or SFP+ has been disabled.

USB Mini-Type B Port

A USB 5-pin mini-Type B connector on the front panel is available for switch management (Figure 1-5).

Figure 1-5 USB Mini-Type B Console Port

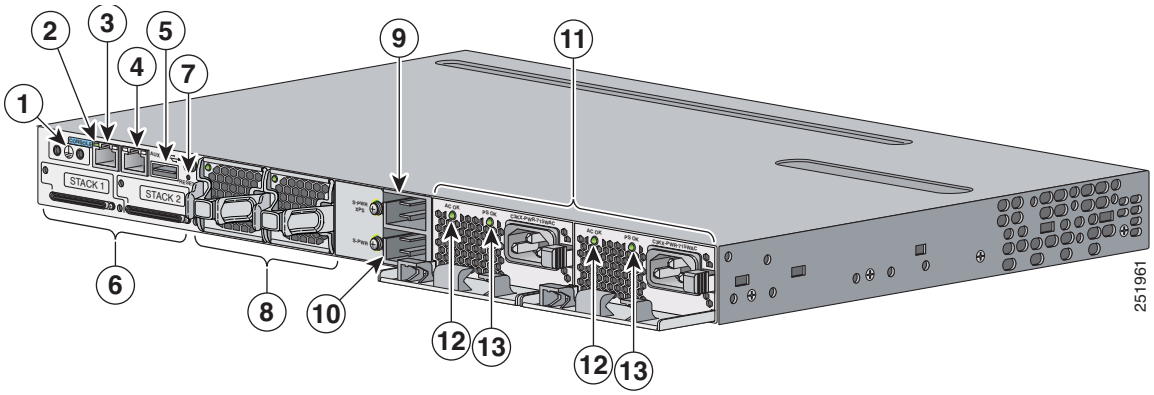


See the "Management Ports" section on page 1-20 for details.

Rear Panel Description

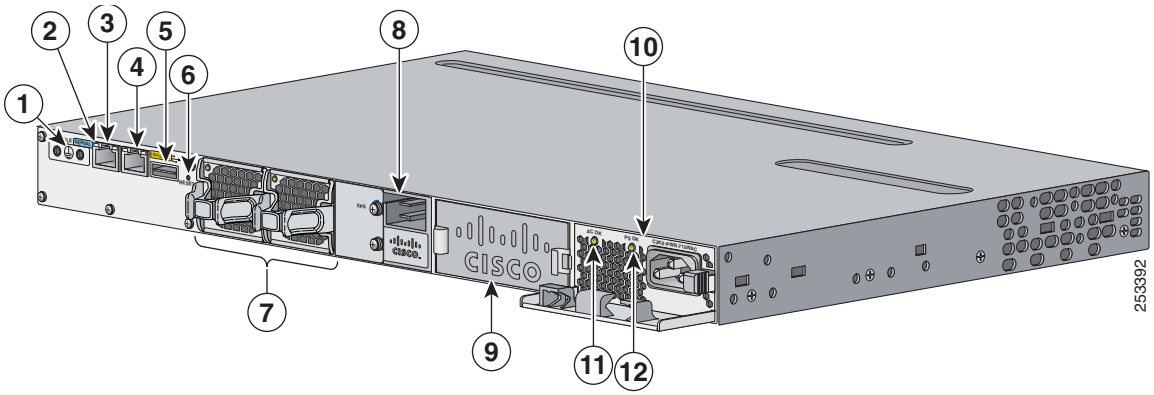
The switch rear panel has a ground connector, an RJ-45 console port, an RJ-45 10/100 management port, a USB Type A connector, two StackWise connectors (only Catalyst 3750-X switches), two fan modules, an XPS-2200 connector, a StackPower connector (only Catalyst 3750-X switches), and two power supply module slots. See Figure 1-6, and the descriptions on the following pages. Figure 1-6 shows the Catalyst 3750-X-48 PoE+ switch, which has one connector for either a StackPower or an XPS connection, and one connector only for StackPower. Figure 1-7 shows the Catalyst 3560-X switch rear panel, which has one connector for XPS and no StackPower connector.

Figure 1-6 Catalyst 3750-X Switch Rear Panel



1	Ground connector	**8**	Fan modules
2	RJ 45 console port LED	**9**	StackPower or XPS-2200 connector
3	RJ-45 console port	**10**	StackPower connector
4	RJ-45 10/100 management port	**11**	Power supply modules (AC power supply modules shown)
5	USB Type A connector	**12**	AC power (input) status LED
6	Stack cable connectors	**13**	Power supply (output) status LED
7	Reset button		

Figure 1-7 Catalyst 3560-X Switch Rear Panel



1	Ground connector	**7**	Fan modules
2	RJ-45 console port LED	**8**	XPS-2200 connector
3	RJ-45 console port	**9**	Power supply module slot (blank module shown)
4	RJ-45 10/100 management port	**10**	Power supply module (AC power supply module shown)
5	USB Type A connector	**11**	AC power (input) status LED
6	Reset button	**12**	Power supply (output) status LED

RJ-45 Console Port LED

Table 1-15 RJ-45 Console Port LED

Color	RJ-45 Console Port Status
Off	RS-232 console is disabled.
Green	RS-232 console is enabled.

USB Type A Interface

The USB Type A interface provides access to external USB FLASH devices (also known as thumb drives or USB keys).

The interface supports Cisco USB flash drives with capacities from 64 MB to 1 GB.

Cisco IOS software provides standard file system access to the flash device: read, write, erase, and copy, as well as formatting of the flash device with a FAT file system. You can boot the switch from a USB drive.

For information about the switch management ports, see the switch software configuration guide and the command reference on Cisco.com and the "Connector and Cable Specifications" section on page B-1.

StackWise Ports

The Catalyst 3750-X switch ships with a 0.5-meter StackWise cable (CAB-STACK-50CM) that you can use to connect the StackWise ports.

Caution Use only approved cables (CAB-STACK-50CM, CAB-STACK-1M, CAB-STACK-3M, CAB-STACK-50CM-NH,CAB-STACK-1M-NH, or CAB-STACK-3M-NH), and connect only to similar Cisco equipment. Equipment might be damaged if connected to nonapproved Cisco cables or equipment.

You can order these StackWise cables from your Cisco sales representative:

- CAB-STACK-50CM (0.5-meter cable)
- CAB-STACK-1M= (1-meter cable)
- CAB-STACK-3M= (3-meter cable)

- CAB-STACK-50CM-NH= (0.5-meter cable, nonhalogen)
- CAB-STACK-1M-NH= (1-meter cable, nonhalogen)
- CAB-STACK-3M-NH= (3-meter cable, nonhalogen)

Power Supply Modules

The 24- and 48-port switches are powered through one or two internal power supply modules. The "Switch Power Supply Modules" section on page 1-17 and Table 1-16 describe the supported power supply modules.

Switch Power Supply Modules

The switch has two internal power supply module slots. You can use two AC modules, two DC modules, a mixed configuration of one AC and one DC power supply module, or one power supply module and a blank module.

The switch can operate with either one or two active power supply modules or with power supplied by an XPS-2200. A Catalyst 3750-X switch that is in a StackPower stack can operate with power supplied by other switches in the stack.

Table 1-1 and Table 1-2 show the power supply modules that ship with each switch model. All power supply modules (except the blank modules) have internal fans. All switches ship with a blank power supply module in the second power supply slot.

Caution Do not operate the switch with one power supply module slot empty. For proper chassis cooling, both power supply module slots must be populated.

The 350-W and 715-W AC power supply modules are autoranging units that support input voltages between 100 and 240 VAC. The 1100-W power supply module is an autoranging unit that supports input voltages between 115 and 240 VAC. The 440-W DC power supply module has dual input feeds (A and B) and supports input voltages between 36 and 72 VDC. The output voltage range is 51–57 V.

Each AC power supply module has a power cord for connection to an AC power outlet. The 1100-W and 715-W modules use a 16-AWG cord (only North America). All other modules use an 18-AWG cord. The DC-power supply module must be wired to a DC-power source.

The XPS-2200 powers connected switches when the power supply is removed or fails. When a new switch power supply is installed, the switch software polls the device. The switch power supply again provides power, and the XPS-2200 is available to power other devices.

Table 1-16 shows the power supply modules available for Catalyst 3750-X and 3560-X switches and power supply configurations based on switch models.

Table 1-16 Switch Power Supply Modules

Power Supply Module	48-Port PoE+ Switch[1]	24-Port PoE+ Switch	48-Port Non-PoE+ Switch	24-Port Non-PoE+ Switch
C3KX-PWR-1100WAC= C3KX-PWR-1100WAC-JP=[2]	Primary or spare	Spare	Spare	Spare
C3KX-PWR-715WAC=	Spare	Primary or spare	Spare	Spare

Table 1-16 Switch Power Supply Modules (continued)

Power Supply Module	48-Port PoE+ Switch[1]	24-Port PoE+ Switch	48-Port Non-PoE+ Switch	24-Port Non-PoE+ Switch
C3KX-PWR-350WAC=	Spare	Spare	Primary or spare	Primary or spare
C3KX-PWR-440WDC=	Primary or spare	Primary or spare	Primary or spare	Primary or spare
C3KX-PSBAY-BLNK	Blank module	Blank module	Blank module	Blank module

1. For full 15.4 W support on a 48-port PoE+ switch, you must use a C3KX-PWR-1100WAC power supply module.
2. This module is used only in Japan.

Table 1-17 Switch Power Supply Requirements for PoE and PoE+

PoE Option	24-Port Switch	48-Port Switch
PoE (up to 15.4 W per port)	(1) 715-W power supply (2) 440-W DC power supplies	(1) 1100-W power supply
PoE+ (up to 30 W per port)	(1) 1100-W power supply	(1) 1100-W power supply plus one 715-W power supply or (2) 1100-W power supplies

Note A 48-port switch with one 715-W power supply provides up to 8.7 W of PoE to all ports.

The power supply modules have two status LEDs.

Table 1-18 Switch Power Supply Module LEDs

AC-Power Supply Module LEDs			
AC OK	**Description**	**PS OK**	**Description**
Off	No AC input power.	Off	Output is disabled, or input is outside operating range (AC LED is off).
Green	AC input power present.	Green	Power output to switch active.
		Red	Output has failed.
DC-Power Supply Module LEDs			
DC OK	**Description**	**PS OK**	**Description**
Off	No DC input power.	Off	Output is disabled, or input is outside operating range (DC LED is off).
Green	DC input power present.	Green	Power output to switch active.
		Red	Output has failed.

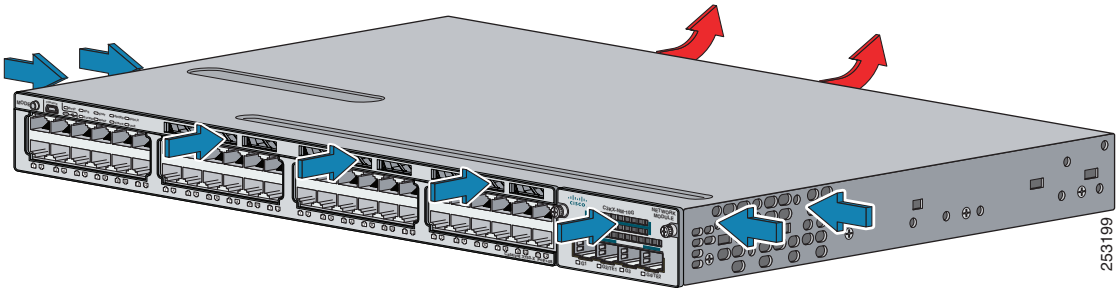
For information about replacing a power supply module, wiring a DC power supply module, and module specifications, see Chapter 3, "Power Supply and Fan Module Installation," and Appendix A, "Technical Specifications."

Fan Modules

The switch has two internal hot-swappable 12-V fan modules, each with two fans. The air circulation system consists of the fan modules and the power supply modules. The airflow patterns vary depending on the power supply configuration.

Figure 1-8 shows the airflow patterns for the 24- and 48-port switches. The blue arrow shows cool air flow, and the red arrow shows warm air flow. When the fan modules are operating properly, a green LED is on at the top left corner of the fan assembly (viewed from the rear). If the fan fails, the LED turns to amber.

Figure 1-8 24- and 48-Port Switch Airflow Patterns



For information about installing a fan module and the module specifications, see Chapter 3, "Power Supply and Fan Module Installation," and Appendix A, "Technical Specifications."

XPS Connector

Warning **Attach only the following Cisco external power system to the switch: XPS 2200.** Statement 387

The Cisco XPS-2200 is a expandable power system that can support nine network switches and provides power to one or two failed switches at a time. It senses when the power supply of a connected switch fails and provides power to the failed switch.

Use the XPS-2200 only with approved Cisco XPS cables. You can order these XPS cables for connecting your switch to the XPS-2200 from your Cisco sales representative:

- CAB-XPS-58CM (0.58-meter cable)
- CAB-XPS-150CM (1.5-meter cable)

The Cisco XPS-2200 has a nominal output level of –56 V. The total maximum output power depends on the installed power supply modules.

The nine ports on the XPS-2200 provide the power and management signals to the Catalyst 3750-X and 3560-X switches. Other switch models do not support this management communication. The XPS-2200 communicates with each switch through the 12-pin cable. All connected switches can simultaneously communicate with the XPS-2200. You can configure these XPS-2200 features through the switch software:

- Enable XPS active or standby mode for each connected switch
- Configure switch priority for XPS support
- List the connected switches and power supply module sizes
- Report when a switch is powered by the XPS
- Report the XPS power supply module status
- Read and monitor backup, failure, and exception history

See the switch software configuration guide on Cisco.com:

http://www.cisco.com/en/US/products/ps10745/products_installation_and_configuration_guides_list.html

StackPower Connector (Catalyst 3750-X Switches)

The Catalyst 3750-X switches have a StackPower connector for use with Cisco StackPower cables to configure a switch power stack that includes up to four switches. By adding an XPS-2200 expandable power system, you can configure a power stack that comprises up to nine switches. A switch power stack can be configured in redundant or power-sharing mode.

You can order these StackPower cables from your Cisco sales representative:

- CAB-SPWR-30CM (0.3-meter cable)
- CAB-SPWR-150CM (1.5-meter cable)

For details about connecting StackPower cables and StackPower guidelines, see the "Planning a StackPower Stack (Catalyst 3750-X Switches)" section on page 2-8.

Management Ports

Ethernet Management Port

You can connect the switch to a host such as a Windows workstation or a terminal server through the 10/100 Ethernet management port or one of the console ports (see Figure 1-5 and Figure 1-6). The 10/100 Ethernet management port connection uses a RJ-45 crossover or straight-through cable. The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable. The USB console port uses a USB type-A-to-USB 5-pin mini-Type B cable.

Table 1-19 shows the Ethernet management port LED colors and their meanings.

Table 1-19 RJ-45 Console Port LED

Color	Description
Green	Active link to PC

Table 1-19 RJ-45 Console Port LED

Color	Description
Off	Inactive link
Amber	POST failure

USB Mini-Type B Port

The switch provides a USB mini-Type B console connection on the front panel, and the RJ-45 console port on the switch rear panel. Console output is always active on both connectors, but console input is active on only one connector at a time, with the USB connector taking precedence over the RJ-45 connector.

Use a USB type-A-to-USB 5-pin mini-Type B cable to connect a PC or other device to the switch. The required USB cable is included in the optional accessory kit, (part number 800-33434).

The connected device must include a terminal emulation application.

Windows PCs need a driver for the USB port. See the "Installing the Cisco Microsoft Windows USB Device Driver" section on page C-3 for installation instructions.

When the switch detects a valid USB connection to a powered device, input from the Ethernet connection is immediately disabled, and input from the USB console is enabled. Removing the USB connection immediately reenables input from the Ethernet connection. An LED on the switch front panel (see Figure 1-2) is green when the USB console connection is enabled.

The switch provides a configurable inactivity timeout that reactivates the RJ-45 console if no input activity has occurred on the USB console for a specified time period. After the USB console has been deactivated due to a timeout, you can restore its operation by disconnecting and reconnecting the USB cable. You can disable USB console operation by using Cisco IOS commands. See the switch software configuration guide for details.

Management Options

- Cisco Network Assistant

  Cisco Network Assistant is a PC-based network management GUI application for LANs. You can use the GUI to configure and manage switch clusters or standalone switches. Cisco Network Assistant is available at no cost and can be downloaded from this URL:

  http://www.cisco.com/go/networkassistant

  For information on starting the Network Assistant application, see the *Getting Started with Cisco Network Assistant* guide on Cisco.com.

- Device manager

  You can use the device manager in the switch memory to manage individual and standalone switches. This web browser interface offers quick configuration and monitoring from anywhere in your network. For information, see the switch getting started guide and the device manager online help.

- Cisco IOS CLI

  You can configure and monitor the switch and switch cluster members from the CLI. You can access the CLI by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See the switch command reference on Cisco.com for more information.

- CiscoWorks application

  The CiscoWorks LAN Management Solution (LMS) is a suite of management tools that simplify the configuration, administration, monitoring, and troubleshooting of Cisco networks. See the LMS documentation for more information.

- SNMP network management

  You can manage switches from a Simple Network Management Protocol (SNMP)-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. See the switch software configuration guide on Cisco.com and the documentation that came with your SNMP application for more information.

Network Configurations

See the switch software configuration guide on Cisco.com for network configuration concepts and examples of using the switch to create dedicated network segments and interconnecting the segments through Gigabit Ethernet connections.